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No. 85-1741

IN THE

Supreme Court of the United States

OCTOBER TERM, 1985

AMERICAN MINING CONGRESS,
AMAX INC.,
ASARCO INCORPORATED,
ST. JOE MINERALS CORPORATION,

Petitioners,

v.

ENVIRONMENTAL PROTECTION AGENCY,

Respondent.

Petition for Writ of Certiorari to the United States Court of Appeals for the Fourth Circuit

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APPENDIX

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APPENDIX A

UNITED STATES COURT OF APPEALS FOR THE FOURTH CIRCUIT

No. 84-1288 (L)

Kennecott,
Petitioner,
versus
United States Environmental Protection Agency,
Respondent.
GTE Products Corporation,
Intervenor/Petitioner.

No. 84-1479

American Mining Congress,
AMAX, Inc., and ASARCO Incorporated,
Petitioners,
versus
United States Environmental Protection Agency,
Respondent.

No. 84-1487

St. Joe Minerals Corporation,
Petitioner,
versus
United States Environmental Protection Agency,
Respondent.

No. 84-1659

The Secondary Lead Smelters Association,
Petitioner,

versus

William Ruckelshaus, Administrator,
United States Environmental Protection Agency,
Respondent.

Gulf Coast Lead Company,
Intervenor/Petitioner.

No. 84-1694

Mallinckrodt, Inc.,
Petitioner,

versus

United States Environmental Protection Agency,
Respondent.

On Petition for Review of an Order of the Environmental Protection Agency.

Argued: October 9, 1985 Decided: December 26, 1985

Before PHILLIPS, MURNAGHAN and WILKINSON, Circuit Judges.

James R. Walpole (Susan L. Smith; Holland & Hart on brief); Robert A. Emmett (Reed, Smith, Shaw & McClay on brief); Kurt E. Blase (Edwin H. Seeger; Richard T. Witt; Prather, Seeger, Doolittle & Farmer; Paul D. Frohardt; Holland & Hart; Douglas E. McAllister, Assistant Chief Counsel, American Mining Congress on brief) for Group I Petitioners; Robert N. Steinwurtzl (Stephen E. Roady; Mary Douglas Dick; Brown, Roady, Bonvillian & Gold, Chartered on brief) for Group III Petitioners; Theodore L. Garrett (Laird Hart; Covington & Burling on brief) for Group IV Petitioners; Michael W. Steinberg, U. S. Department of Justice; Steven E. Silverman, Office of General Counsel, U. S. Environmental Protection Agency (F. Henry Habicht, II, Assistant Attorney General, Land and Natural Resources Division; Dean K. Dunsmore; Scott Slaughter; U. S. Department of Justice; Ellen Siegler; Office of General Counsel, U. S. Environmental Protection Agency; Susan G. LePow, Assistant General Counsel, U. S. Environmental Protection Agency on brief) for Respondent.

WILKINSON, Circuit Judge:

Petitioners challenge the effluent limitations set by the Environmental Protection Agency for the non-ferrous metals manufacturing industry. EPA established the limitations in a rulemaking pursuant to the Clean Water Act of 1977, 33 U.S.C. §§ 1251-1376 (1982).[1] Congress passed the Clean Water Act as an amendment to the Federal Water Pollution Control Act of 1972. The amendment pre-

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[1] The challenged regulations are codified at 40 C.F.R. § 421 (1985).

serves the fundamental purpose of the 1972 Act: "[t]o restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. § 1251. In setting effluent limitations for the non-ferrous metals industry, EPA acted to implement this congressional mandate to clean up the nation's navigable waterways. We have reviewed with care petitioners' challenges to these regulations. We conclude, however, that EPA has properly discharged the task it is required by Congress to perform.

I.

The instant action reflects the tensions recurrent in every case of environmental regulation. The first group of petitioners here produce substantial amounts of the country's primary copper, lead, and zinc. Others recycle discarded lead batteries for a variety of uses, and still another produces columbium-tantalum, of importance to the aerospace, energy, and transportation industries. The industries contend that the effluent limitations adopted by EPA in the name of the Act are unachievable and will impose widespread costs upon the industries themselves and upon those who depend for their economic livelihood upon nonferrous metals use.

EPA in turn states that petitioners discharge massive amounts of pollutants, over 3 million pounds annually, including "some of the most toxic metals found in industrial waste streams . . . lead, cadmium, arsenic, antimony, and zinc." It contends these pollutants create "a variety of serious adverse health and environmental effects, including cancer, brain damage, and kidney failure." The effluent limits are, in EPA's view, based upon achievable technologies and must be met promptly to fulfill the basic purposes of the Clean Water Act.

The record in this case is voluminous. The rulemaking itself is highly technical. Petitioners have challenged EPA's choice of data, its statistical methods, and its economic

analysis. It is something of an understatement to say that the expertise of the parties with regard to the non-ferrous metals industry exceeds that of this court. Without suspending our critical faculties, we nonetheless believe that the benefit of the doubt in the battle of the data belongs to the agency in which Congress has reposed responsibility for administration of the Act, *see* 33 U.S.C. § 1251(d). In addition, this court is bound by the general rules of deference that run throughout administrative law. We may not overturn the agency's judgment simply because we might have drafted different regulations; remand is limited to those cases in which the agency has acted without reasonable basis. *American Meat Inst. v. EPA*, 526 F.2d 442, 450 (7th Cir. 1975).

We begin with the philosophy of the Clean Water Act. The Act requires EPA to set effluent limitations for industries in two stages. As a preliminary matter, Congress asked EPA to set limits based on the "best practicable control technology currently available" (BPT). 33 U.S.C. § 1311(b)(1)(A). EPA defines BPT as "the average of the best existing performance by plants of various sizes, ages and unit processes within each industrial category or subcategory. This average is not based upon a broad range of plants within an industrial category or subcategory, but is based upon performance levels achieved by exemplary plants." *EPA v. Nat'l Crushed Stone Ass'n*, 449 U.S. 64, 76 n.15 (1980), quoting 39 Fed. Reg. 6580 (1974).

In the second stage, Congress directed EPA to set an even more stringent standard, basing effluent limitations on the "best available technology economically achievable" (BAT) for an industrial category. 33 U.S.C. § 1311(b)(2)(A)(C)(D) and (F). The BAT standard reflects the intention of Congress to use the latest scientific research and technology in setting effluent limits, pushing industries toward the goal of zero discharge as quickly as possible. In setting BAT, EPA uses not the average plant, but the optimally operating plant, the pilot plant which acts as a

beacon to show what is possible. *See A Legislative History of the Water Pollution Control Act Amendments of 1972*, 93d Cong., 1st Sess. (Comm. Print 1973), at 798 (hereinafter "Leg. Hist."). "The distinction between 'best practicable' and 'best available' is intended to reflect the need to press toward increasingly higher levels of control. . . ." Leg. Hist. at 170.

For the purposes of this case, the non-ferrous metals industry was generally subject to BAT requirements. Defining Best Available Technology requires substantial technical expertise in evaluating both the efficiency of advanced technologies and the adaptability of those technologies to the production processes of the companies in this case. Our review of the EPA rulemaking is appropriately cautious. As this court has previously noted, "The scope of our review is further colored by the policy of the Clean Water Act and the sophisticated data evaluations mandated by that lengthy and complicated statute. . . . Further, technological and scientific issues, such as those presented in this case, are by their very nature difficult to resolve by traditional principles of judicial decisionmaking." *Reynolds Metals Co. v. EPA*, 760 F.2d 549, 558-59 (4th Cir. 1985).

We proceed, however, on the understanding that Best Available Technology was the means chosen by Congress to achieve "the national goal that the discharge of pollutants into the navigable waters be eliminated by 1985," 33 U.S.C. § 1251(a)(1), a goal that implies some urgency to the environmental task that Congress set. While Congress was careful to require agency consideration of such factors as the cost to industry of achieving appropriate effluent reductions, it left EPA some latitude in defining BAT, permitting in addition to enumerated criteria, the consideration of "such other factors as the Administrator deems appropriate." *See* 33 U.S.C. § 1314(b)(2)(B).

To achieve a reasoned result in a dispute over technologies, EPA is bound to consider industry data, but it is not bound to accept it. Any other resolution would undermine the integrity of agency decision-making. For obvious reasons, this court should be loathe to compel an agency to accept data submitted by a regulated industry. That does not imply we are blind to the capacities of agencies to enthrone their own agendas and dismiss contending views. In considering petitioners' challenges to the non-ferrous metals rulemaking, we ask whether EPA's technical judgments find support in the record and whether they reflect the rule of reason, not the imposition of fiat.

The deference to the technical expertise of the Administrator supplements the deference generally required of courts reviewing administrative actions. The Administrative Procedure Act (APA) specifies that a court may overturn an agency action only if it is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. § 706(2)(A). The court best acts as a check on agency decisionmaking by scrutinizing process and by determining whether "the decision was based on a consideration of the relevant factors and whether there has been a clear error of judgment." *Citizens to Preserve Overton Park, Inc. v. Volpe*, 401 U.S. 402, 416 (1971). Whether the agency has provided notice and an opportunity to comment, and has fairly considered all significant data and comments, is the heart of the judicial inquiry. *Chocolate Mfrs. Ass'n v. Block*, 755 F.2d 1098 (4th Cir. 1985). Once the agency has been found to follow the prescribed course of procedure, its "choice of scientific data and statistical methodology" is entitled to respect. *National Ass'n of Metal Finishers v. EPA*, 719 F.2d 624, 657 (3rd Cir. 1983), *rev'd on other grounds sub nom. Chemical Mfrs. Ass'n v. NRDC*, ___U.S. ___, 105 S.Ct. 1102 (1985).

EPA did not approach casually the task of non-ferrous metals rulemaking. In 1977, the agency began gathering data for the proposed rules which it published on February

17, 1983. 48 Fed. Reg. 7032-7126. Data was obtained from plant visits, plant samplings, studies of scientific journals, and consultations with industry. Three hundred and nineteen firms, operating 416 facilities, received questionnaires from EPA asking for information on flow rates, production rates, wastewater treatment, and costs. *Id.* at 7044. Each plant visited by EPA also received an opportunity to comment on the trip report prepared by the agency. Various of the petitioners met with EPA both before and after publication of the proposed rules.

The resulting record ran 24,000 pages. EPA solicited public comment on all aspects of the regulations, highlighting points on which the agency wanted additional information. *Id.* at 7073. The initial comment period lasted eleven weeks. EPA reopened the comment period twice and accepted late-filed comments from one of the petitioners. 48 Fed. Reg. 50906 (Nov. 4, 1983); 48 Fed. Reg. 52604 (Nov. 21, 1983).

The agency considered the comments and contacted each petitioner with follow-up inquiries. The comments led EPA to re-examine its selections of model technologies and data bases. EPA likewise considered additional data on the treatment of lead and ammonia, as well as continuing to request and evaluate data from plants that had not previously submitted data. The long process of gathering data and the ongoing dialogue with the industry culminated in the final rule promulgated March 8, 1984.

We do not imply, in detailing this lengthy consideration, that a matter of the magnitude and complexity of nonferrous metals rulemaking deserved anything less. We note only that an appellate court cannot be oblivious to the expenditure of effort that preceded its consideration and that, if the process has been a fair one, a time does come when rulemaking may cease and compliance must commence.

II.

For the purposes of this appeal, petitioners have been grouped according to industry. The first group of petitioners are Kennecott, American Mining Congress, AMAX, Inc., ASARCO Incorporated, St. Joe Minerals Corporation, and GTE Products Corporation (hereinafter "Kennecott"). Together these companies are responsible for much of the United States production of primary copper, primary lead and primary zinc. Their plants process ore mined from the ground to produce the primary base metals.

Kennecott objects to the non-ferrous metals rulemaking, arguing that the agency's data base was flawed, that petitioners were not given the opportunity to comment on part of the model technology, sulfide precipitation, and that EPA incorrectly calculated flow allowances. After carefully considering petitioners' numerous and specific objections, we have concluded that EPA acted within the bounds of its discretion when it set effluent limits for the primary metals industry.

A.

When it set effluent limits for the primary metals industry, EPA used as its model technology a waste treatment process called lime, settle and filtration (L,S&F). Briefly, this treatment technique works in the following way: adding lime to wastewater increases the pH; it makes the wastewater more alkaline. At different pHs, different metals precipitate, that is, emerge from solution and become suspended as solids in the wastewater. Eventually, most solids settle at the bottom of the tank. The precipitate can then be disposed of separately from the wastewater. The wastewater is often subsequently filtered through coal or sand in order to remove additional suspended solids.

A number of industries use lime and settle. Beginning in the late 1970's, EPA collected data from six such industries (aluminum forming, battery manufacturing, secondary lead, coil coating, copper forming, and porcelain enameling). After deleting unreliable data, EPA compiled the Combined Metals Data Base (CMDB). The agency then used the CMDB to calculate achievable effluent limitations for several related industries, including the primary base metals industry.

Kennecott objects to EPA's use of the CMDB. It argues that the CMDB data was limited, that the wastewaters of CMDB plants differed significantly from those of the primary metals plants, and that EPA should not have rejected data submitted by the primary metals industry.

Kennecott's basic objection is that EPA used data from the waste treatment systems of other industries (the CMDB) rather than using data submitted by the primary metals industry. Specifically, Kennecott makes the following argument: EPA's data base was limited, containing only 300 raw and treated data points from nineteen plants. EPA did not obtain samples from any given plants over a long term; therefore, the data cannot accurately reflect long-term performance. Kennecott contends that long-term data is necessary because fluctuations in pollutant concentrations occur even in properly operated treatment facilities due to "seasonal changes in temperature and precipitation, production surges or slow downs" and other variables. Because EPA did not collect enough samples, over a long enough period of time, Kennecott contends that the data does not accurately reflect achievable concentrations. Therefore, Kennecott says, petitioners will not be able to meet the effluent limitations.

In response, EPA notes that courts customarily defer to an agency's choice of data, and that in any case, EPA could use the CMDB to predict long-term performance accurately. On the first point, the agency is indisputably

correct. This court has consistently given EPA a reasonable leeway in its selection of data and statistical methods. *FMC Corp. v. Train,* 539 F.2d 973, 986 (4th Cir. 1976). "[W]e note that an agency's data selection and choice of statistical methods are entitled to great deference . . . and its conclusions with respect to data and analysis need only fall within a 'zone of reasonableness'." *Reynolds Metals,* 760 F.2d at 559 (citations omitted). The question is thus whether EPA acted reasonably in basing effluent limitations for the primary base metals industry on the CMDB.

EPA contends that it does not necessarily need long-term data to predict long-term performance. It notes that the data base at issue here has been used in regulations in a number of other metals industries. By using well-established statistical methods, EPA could factor in the variability one would expect in an optimally operating plant. It is true that prediction of long-term performance would not account for fluctuations resulting from operational failures. However, the agency argues that plants with operating problems do not represent the Act's goal of Best Available Technology. *FMC Corp. v. Train,* 539 F.2d at 986. ("The purpose of these variability factors is to account for the routine fluctuations that occur in plant operation, not to allow for poor performances.") Moreover, the agency contends that the addition of second-step sulfide precipitation to the model technology further reduces the variability of lime and settle treatment. *See* subsection IIB, *infra.* Courts have traditionally respected the agency's selection of a data base in the face of challenges that the data failed to account for variable pollution loads, *Ass'n of Pac. Fisheries v. EPA,* 615 F.2d 794, 812-13 (9th Cir. 1980); *American Petroleum Inst. v. EPA,* 540 F.2d 1023, 1035-36 (10th Cir. 1976). The number of data points here is not insignificant, and there must exist some reasonable termination point in the process of data collection.

Kennecott responds that even if EPA collected a sufficient number of data points, the CMDB remains flawed.

It argues that the CMDB wastewater is so different from the wastewater in the primary metals industries that EPA cannot use the CMDB to set effluent limits that would apply to Kennecott. Without quantifying its claim, Kennecott says that the base metals industry has "huge amounts of wastewater," "tremendously high concentrations of metals," and a "very large variety of different metals" in the wastewater. EPA's similarly unquantified response is that the wastewaters in the CMDB industries and those of the primary base metals industry are indeed comparable. The agency agrees that the differences in concentration of metals may be statistically significant. However, there is evidence to show that the treatability of wastewater depends on the solubility of the pollutants, not on their concentrations. A difference in concentration of influents would thus not affect the concentration of effluents. *See* Proposed Rules, 48 Fed. Reg. 7050 (Feb. 17, 1983). This judgment constitutes a reasonable basis for EPA's belief that the wastewaters are comparable. We cannot say that EPA has acted arbitrarily or capriciously in using the CMDB to set effluent limitations for the primary metals industries.

Finally, we do not believe that EPA acted arbitrarily in rejecting the data submitted by the industry. EPA examined the data from petitioners' plants and concluded that six of the plants were not operating properly, and the seventh was unrepresentative. EPA determined that three plants were improperly operating one or more steps of the lime and settle process; they had ineffective pH adjustment, inadequate wastewater settling time, or lacked wastewater equalization. Plants use equalization to send more uniform loads of pollutants to the treatment system, ensuring that the system is not overloaded. In three other plants, patterns of extreme variability in treated effluents suggested to EPA that the plants were not equalizing their wastewaters properly. Finally, EPA considered that the seventh plant was unrepresentative because nearly all of

its wastewater came from sources not related to the manufacturing processes covered by these regulations. We cannot say, therefore, that EPA abused its discretion by rejecting the industry data.

B.

EPA had originally proposed lime, settle and filtration as the BAT for treating wastewater in the primary base metals industry. Commenters objected that they would not be able to meet the proposed effluent limitations. In the Final Rules, EPA responded that any plant unable to meet the effluent limitations by using the model lime, settle and filtration technology could add an additional step: sulfide precipitation. While the APA requires the opportunity for public participation in rulemaking, "[t]here is no question that an agency may promulgate a final rule that differs in some particulars from its proposal." *Chocolate Manufacturers*, 755 F.2d at 1103-04. Kennecott objects, however, to the inclusion of sulfide precipitation on the grounds that it was not given notice or the opportunity to comment. Had it been given the opportunity, Kennecott says, it would have filed comments detailing the reasons that sulfide precipitation would not reduce effluent concentrations to the required levels.

Sulfide precipitation works on the same principle as lime and settle. When sulfide is added to wastewater, certain pollutants precipitate out and become suspended as solids in the wastewater. The wastewater is held in tanks until most of the precipitated metals have settled to the bottom. Filtration will remove additional suspended solids. When sulfide precipitation precedes L,S&F, it is called "sulfide pretreatment." When sulfide precipitation follows L,S&F, it is called "sulfide polishing."

Kennecott charges that EPA gave no indication that it was considering using lime, settle and filter plus sulfide precipitation as the model technology. An agency is, of

course, required to give notice "sufficiently descriptive to provide interested parties with a fair opportunity to comment and to participate in the rulemaking." *Chocolate Manufacturers*, 755 F.2d at 1104. EPA listed six control and treatment options in the proposed rules; sulfide precipitation was not among them. We note, however, that the agency is not required to specify every precise proposal that it may eventually adopt as a rule, *Consolidation Coal Co. v. Costle*, 604 F.2d 239, 248 (4th Cir. 1979). EPA actually did discuss sulfide precipitation in the Development Document, which accompanied the Proposed Rules, although Kennecott contends that these brief references were insufficient to give notice, buried as they were amidst a discussion of two dozen other treatment technologies. As a result, Kennecott believes it was deprived of notice and the opportunity to comment on sulfide precipitation.

EPA would characterize the sequence of events here differently: EPA proposed limits, the primary metals industry commented that it would not be able to meet those limits, and EPA added another treatment step so that plants could more readily comply with the established effluent guidelines. EPA styles its introduction of sulfide precipitation a "natural and logical outgrowth" of the commenting procedure. *Cf. BASF Wyandotte Corp. v. Costle*, 598 F.2d 637, 642 (1st Cir. 1979), *cert. denied sub nom. Eli Lilly & Co. v. Costle*, 444 U.S. 1096 (1980). This description of events may, of course, mask a displeasing side of agency behavior. It is not acceptable for an agency to set unachievable limits, and then, when the industry objects, to pull a curative technology out of its hat. This sort of conduct would frustrate the purpose of the procedural safeguards in the administrative process, and replace participatory rulemaking with rulemaking by ambush.

The question of adequate notice requires "careful consideration on a case-by-case basis." *BASF Wyandotte*, 598 F.2d at 642. Here, there is no indication that EPA acted in bad faith and there is ample indication that the base metals

industry should reasonably have known that EPA was considering sulfide precipitation. In the preamble to the proposed rules, EPA specifically asked for comments on alternative treatment technologies. In the associated Development Document, EPA included both lime and settle and sulfide precipitation in its discussion of effective chemical precipitation methods. EPA also discussed the advantages and limitations of sulfide precipitation in some detail. Finally, the Development Document contained several charts on sulfide precipitation, including data on the performance of sulfide precipitation-sedimentation systems and a comparison of the solubilities of hydroxides and sulfides of selected metals.

Just as an agency may not ambush an industry by withholding a proposed technology until after the period for comment, an industry may not remain silent during that period only to complain upon appeal that it was deprived of an opportunity to comment on what it might reasonably have been apprised. This circuit has also noted that while an agency may not bootstrap new technologies from the comments, it may make "substantial changes" in its original proposed rule if the changes are a "logical outgrowth" of the original proposal and the notice and comments upon it. *American Paper Inst. v. EPA*, 660 F.2d 954, 959 n.13 (4th Cir. 1981). Accordingly, we hold that EPA did not violate the requirements of the Administrative Procedure Act when, in an attempt to respond to industry comments and complaints, it added sulfide precipitation as a supplement to the Best Available Technology on which its effluent limitations were grounded.

There remains the question of whether EPA acted arbitrarily in selecting sulfide precipitation as part of the Best Available Technology. Kennecott argues that sulfide precipitation will not reduce effluent concentrations to the required levels. Specifically, Kennecott charges that data from the model plants which currently use sulfide precipitation (Ashio, Japan; Boliden, Sweden; AMAX Ft. Madi-

son) cannot be used to predict achievable concentrations at Kennecott's plants, because conditions at the two groups of plants are so different. Kennecott notes that the plant in Ashio, Japan, for example, uses sulfide precipitation to produce arsenic trioxide as an end-product, rather than to treat wastewater. EPA replies that the ultimate disposition of the solid precipitate is irrelevant, as long as the concentration levels of pollutants in the wastewater are acceptable.

The model technology may exist at a plant not within the primary base metals industry. Congress contemplated that EPA might use technology from other industries to establish the Best Available Technology. *Reynolds Metals*, 760 F.2d at 562. Progress would be slowed if EPA were invariably limited to treatment schemes already in force at the plants which are the subject of the rulemaking. Congress envisioned the scanning of broader horizons and asked EPA to survey related industries and current research to find technologies which might be used to decrease the discharge of pollutants. Leg. Hist. at 170.

To determine that technology from one industry can be applied to another, the agency must:

> (1) show that the transfer technology is available outside the industry;
>
> (2) determine that the technology is transferable to the industry;
>
> (3) make a reasonable prediction that the technology if used in the industry will be capable of removing the increment required by the effluent standards.

Tanner's Council of America, Inc. v. Train, 540 F.2d 1188, 1192 (4th Cir. 1976) (using the standard set out by the Eighth Circuit in *CPC Int'l Inc. v. Train*, 515 F.2d 1032, 1048 (8th Cir. 1975).

EPA has demonstrated that sulfide precipitation—a process it terms "familiar" and "well established"—is available outside the primary base metals industry and that the technology is transferable to that industry. The agency notes that "the low solubility of metal sulfides" has made sulfide precipitation a more effective treatment than the conventional lime and settle process. We do not think it disqualifying that the Ashio plant, for example, uses sulfide precipitation to produce an end-product rather than to clean its wastewater, so long as the process adequately reduces pollutant concentrations in wastewater. Again, granting the agency a proper measure of deference in technical judgments, it was not arbitrary for EPA to decide that sulfide precipitation would remove pollutants to the degree required by the effluent limitations.

Kennecott discusses two other differences between the sulfide precipitation process at the model plants and the process at the primary base metals plants. Kennecott points that the Ashio plant treats wastewater in batches, while the primary base metals plants treat wastewater continuously. EPA answers that the choice of the batch or continuous processes affects only cost, not effectiveness, and that study demonstrates the installation and operation of sulfide precipitation is economically achievable.

Kennecott also notes that all three model plants use sulfide pretreatment, rather than sulfide polishing. Again, EPA believes that the difference is irrelevant; whether sulfide precipitation is the step before or after L,S&F will not affect the achievability of the desired effluent limitations. The critical matter, in the agency's judgment, is the application of the proper amount of precipitant and the maintenance of proper levels of pH, factors entirely independent of the timing of wastewater treatment.

We hold that EPA had a reasonable basis for deciding that the sulfide precipitation technology is transferable. We are unable to conclude the agency acted arbitrarily or

capriciously in selecting sulfide precipitation as part of the Best Available Technology for the primary base metals industry.

C.

EPA expresses its effluent limitations as "mass limits." EPA derives the mass limit by multiplying the maximum concentration level of a pollutant times water flow. The agency sets flow allowances as well as concentration limits in order to prevent plants from avoiding "the regulatory impact by diluting their effluent." *Weyerhaeuser Co. v. Costle*, 590 F.2d 1011, 1059 (D.C. Cir. 1978). In setting flow allowances, the agency uses a "building block approach." That is, EPA sets a flow allowance for each individual process step; the state or regional permit writer then calculates the total flow allowance for each individual plant by summing the allowances for each process step used at that plant.

Kennecott contends that EPA improperly denied a flow allowance for a step in the process of manufacturing primary lead called blast furnace slag granulation. In the final rules, the BAT standard for blast furnace slag granulation is zero discharge. The New Source Performance Standard (NSPS), which governs new plants, is also zero discharge. Because Congress thought that new plants have the opportunity to install the best and most efficient production processes, NSPS is normally at least as stringent as, if not more stringent than, BAT. *American Iron and Steel Inst. v. EPA*, 526 F.2d 1027, 1058-59 (3d Cir. 1975). Obviously, nothing can be more stringent than zero discharge.

The blast furnace slag granulation step can be either a wet or a dry process. Kennecott contends that dry slag is not an option because it produces uncontrollable dust. Therefore, plants use wet slag, which produces wastewater. Kennecott requests a flow allowance for this waste-

EPA responds that zero discharge for blast furnace slag granulation is appropriate because three of four existing plants recycle 100 percent of their wastewater and thus achieve zero discharge for reasons which are not site-specific. The agency did not abuse its discretion in concluding that no flow allowance need be set for the blast furnace slag granulation process step.

With regard to the NSPS, Kennecott lodges one additional objection. It says that the NSPS is based on pyrometallurgical plants, but that new primary lead smelters are likely to be hydrometallurgical. Kennecott admits that no hydrometallurgical plant is in the process of being built or even contemplated. When such a plant is built, it can be designed according to EPA specifications. If zero discharge is indeed impossible for a hydrometallurgical plant, EPA has said that at that time, it will receive a petition for a new rulemaking. 48 Fed. Reg. 8764 (Mar. 8, 1984).

D.

On occasion, EPA sets catastrophic storm allowances. These allowances permit a plant to discharge additional wastewater under emergency circumstances. Some plants hold liquid waste in "surface impoundments," which are simply natural or manmade depressions. A catastrophic storm allowance permits a plant to discharge untreated wastewater when a storm of a certain size strikes and causes the surface impoundment to overflow. EPA has set no catastrophic storm allowances for primary lead and zinc plants. Copper smelters are permitted to discharge untreated wastewater if a "twenty-five year storm" occurs. A twenty-five year storm is a storm of such magnitude that it is likely to occur only once per quarter century.

Kennecott can no longer challenge the catastrophic storm allowances for zinc and copper. EPA denied the catastrophic storm allowance for zinc in a 1975 rulemaking; the BAT and BPT allowances for copper were set in 1975

and 1980. *See* 40 Fed. Reg. 8528 (Feb. 27, 1975); 40 Fed. Reg. 8524 (Feb. 27, 1975); 45 Fed. Reg. 44929 (July 2, 1980). Petitioners failed to raise their objections within the ninety days specified by the Clean Water Act. 33 U.S.C. § 1369(b)(1).

Kennecott is free to challenge the denial of a storm allowance for the primary lead industry, but we do not find its arguments persuasive. EPA did not set a catastrophic storm allowance for primary lead plants because surface impoundments are not part of the model technology. 48 Fed. Reg. 7048-49 (Feb. 17, 1983). EPA made a conscious decision to discourage impoundments because of associated problems: the risk of groundwater contamination and the danger that heavy pollutants will be discharged all at once. Given EPA's reservations about impoundments and the fact that impoundments are not part of the model technology, EPA did not act arbitrarily in refusing to grant an allowance for catastrophic storms.

EPA also did not set allowances for non-scope flows, that is, wastewater which is not generated by the manufacturing process but comes from other sources like employee showers or handwashing. The preamble to the Final Rules asks permit writers to consider non-scope flows when they write permits for individual plants. 47 Fed. Reg. 8778 (March 8, 1984). Kennecott is concerned that because EPA does not specifically authorize allowances for non-scope flows in the body of the regulations, permit writers will erroneously deny allowances. However, EPA did not set allowances for non-scope flows because these flows are so idiosyncratic. We do not believe that EPA was required to list site-specific sources as a separate subpart of the final regulations. Individual plants will, of course, be able to challenge the flow allowances set by permit writers.

E.

Finally, Kennecott says that it was denied notice and the opportunity to comment on the Pretreatment Stand-

ards for Existing Sources (PSES) BAT applies to plants which are "direct dischargers," that is, plants whose wastewater goes directly into the waterways. Indirect dischargers are plants which discharge waste which is treated by a sewage plant before it reaches public waterways. Indirect dischargers are subject to PSES, rather than to BAT. Because many pollutants either pass through or interfere with the operation of sewage treatment plants, EPA frequently sets PSES equal to BAT.

EPA failed to propose PSES for the primary zinc and lead subcategories because it did not realize there were any indirect dischargers. When EPA learned from the comments that there were indirect dischargers, EPA set PSES equal to BAT. Because EPA had previously disclosed its methodology for establishing BAT, and because it was foreseeable that PSES would be the same as BAT, we cannot say that EPA failed to provide adequate notice.

III.

The next petitioners represent the secondary lead industry, which recycles lead, principally from discarded batteries, in four steps. First the batteries are cracked, then the various parts are separated or "classified" by immersing the battery parts in water. In this step, for example, plastic and rubber are separated from the lead plate. In the third process step, the lead which has been removed from the batteries is smelted. Plants use wet air pollution control systems ("scrubbers") to control the emission from smelting. Finally, the lead is refined and cast. At this stage, plants often use another wet air pollution system, "kettle scrubbers." Each of these process steps results in a wastewater stream contaminated by lead and other pollutants.

The Secondary Lead Smelters Association (SLSA) represents eighty-five percent of U.S. secondary lead smelting capacity. SLSA has challenged the non-ferrous metals rule-

making, arguing that filtration is not economically achievable, that EPA's data base was flawed, and that EPA incorrectly set flow allowances. We have considered its objections and conclude that SLSA has failed to show that EPA acted arbitrarily or capriciously in setting effluent limits for the secondary lead industry.

A.

EPA used multimedia filtration as the last step in the combination of techniques which represent BAT for the secondary lead industry. SLSA contends that multimedia filtration is not economically achievable, and that EPA has already considered and rejected filtration in rulemakings for five other industries.

According to SLSA, EPA significantly underestimated the total cost of filtration by failing to include the costs of larger treatment facilities and remodeling. In its Economic Development Document, EPA considered the possible adverse economic impacts of filtration, including possible plant closures, loss of business to foreign competition, increased cost of production, decreased return on investment, and rising unemployment. This court will not undertake its own economic study, but must uphold the regulations if EPA has established in the record a reasonable basis for its decision. Courts generally allow EPA some leeway in its analysis of costs. *Kennecott Copper Corp. v. EPA*, 612 F.2d 1232, 1238 (10th Cir. 1979); *BASF Wyandotte*, 598 F.2d at 656. Here we must find that EPA has built a record sufficient to support its decision that multimedia filtration is economically achievable.

It is true that EPA has not required filtration for other industries. It is well settled, however, that such inter-industry comparisons are not determinative. *American Meat Inst.*, 526 F.2d at 466; *Portland Cement Ass'n v. Ruckelshaus*, 486 F.2d 375, 389 (D.C. Cir. 1973). The question is whether filtration should be required for the secondary

lead industry, not whether it should be required for some other industry. As the District of Columbia Circuit has noted: "It would be unmanageable if, in reviewing the cement standards, the court should have to consider whether or not there was a mistake in the incinerator standard, with all the differences in parties, practice, industry procedures, and record for decision." *Id.* at 389. This court does not have before it the records of the rulemakings for the five other industries; we are, therefore, reluctant to launch comparisons of model technologies established for one industry with those established for another.[2]

The cost of installing and operating a model technology is not, however, a matter that Congress has permitted the agency to ignore. The statute requires EPA to take into account the cost of achieving effluent reduction. 33 U.S.C. § 1314(b)(2)(B). Furthermore, the agency has the duty to explain its cost analysis fully. *Pacific Fisheries*, 615 F.2d at 820.

Here, EPA did execute a careful analysis of compliance costs and their economic impact. The agency used data from the secondary lead industry to estimate the production and capacity of each plant, and then computed probable revenues from those production and capacity figures. Taking into account wastewater flows and treatment technology already in place, the agency calculated compliance costs for each plant in the secondary lead industry. EPA

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[2] The fact that the agency may undertake such comparisons in establishing BAT for a particular industry poses no anomaly. As we have noted, such comparisons are consistent with the agency's statutory mandate and, in any event, the agency must establish transferability. See section IIB, *supra*.

Moreover, we discern a difference in terms of the statutory purpose between an industry pleading comparisons as a basis for the most lenient effluent guidelines and the agency utilizing comparisons in assessing the Best Available Technology.

next compared compliance costs to revenues for each plant. If the compliance costs exceeded one percent of the revenues, EPA went on to determine whether the plant could remain profitable in the long run, and whether it could absorb the necessary costs during the first few years of compliance.

EPA also calculated changes in cost of production, increase in price, and changes in return on investment, and compared compliance investment costs to average capital expenditures. On completion of its economic analysis, EPA concluded that no plants would be forced to close because of increased costs, and that the regulations would not have a significant adverse impact on employment, foreign trade or the secondary lead smelting industry. Recognizing the importance of this issue to those plants and businesses affected, we nonetheless conclude that EPA acted in accordance with its statutory mandate in assessing the costs of BAT compliance.

B.

SLSA's next request is that the effluent limitations for lead be remanded for consideration of additional data. Initially, EPA based the effluent limitations for lead on three data points from one battery manufacturing plant, Johnson Controls. EPA then added to its data base 201 points from an integrated battery manufacturing/secondary smelting facility, General Battery. SLSA argues that EPA was wrong to use this data, while rejecting data submitted by the industry. We find that EPA did not act arbitrarily with regard to its choice of data.

Specifically, SLSA claims that the wastewaters from the plants EPA used differ significantly from industry wastewater. SLSA says that secondary lead wastewater has higher concentrations of lead. Secondary lead raw wastewater contains 11-92 milligrams per liter of lead. The untreated wastewater at Johnson Controls contained

lead in concentrations of 1.0-1.45 mg/l. However, lead concentrations at General Battery ranged from 21-41 mg/l in the EPA sampling and 0.96-301 mg/l in the plant's self-sampling. We conclude that EPA was not unreasonable in basing its effluent limits on the General Battery data. Had EPA set limits using only the Johnson Controls data, we might well decide this question differently.[3]

EPA also acted within its discretion when it rejected data submitted by the secondary lead industry. EPA said that the data submitted by petitioners did not contain paired influent/effluent points or effluent pH ranges. As a result, EPA felt it was unable to determine whether petitioners' data represented exemplary operation. We cannot find that the agency's rejection of the secondary lead industry data on a matter committed to its expertise is unfounded or arbitrary.

C.

The question of whether the secondary lead industry can achieve cadmium limitations set for other industries is not ripe for review. EPA has not set cadmium limitations for the secondary lead industry. When EPA decides to forego general regulations in favor of having limits set by individual permit writers, the agency has made a considered decision to set particular limitations on a plant-by-plant basis. For this court to deal with the issue of cadmium limitations on appeal as if it were a general rulemaking matter would be to flout the agency's approach to the problem.

The requirement of ripeness is designed "to protect agencies from judicial interference until an administrative

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[3] The agency's euphemistic assertion, without accompanying figures, that Johnson Controls' wastewater "contained lead at concentrations comparable to the lower end of the range of secondary lead plants" is not appreciated. Such representations serve to obscure, not to clarify.

decision has been formalized and its effects felt in a concrete way by the challenging parties." *Abbott Laboratories v. Gardner*, 387 U.S. 136, 148-49 (1967). In determining whether a challenge to an administrative regulation is ripe for review, the court must ask first whether the issue is appropriate for judicial resolution, and second whether the parties will suffer hardship if judicial review is denied. *Id.* at 149.

Here the matter we are asked to review is doubly speculative. We do not know whether the individual permit writers will choose to regulate cadmium at all. Further, it is unclear that a permit writer who does choose to set limits for cadmium will do so by applying standards from other industries to particular secondary lead plants. *Cf. NAMF*, 719 F.2d at 654-55.

The secondary lead industry will likewise suffer no real hardship as a result of this court's denial of judicial review at this juncture. If a permit writer does set cadmium limits for a secondary lead plant, the plant is free to seek review of the permit. *See Diamond Shamrock Corp. v. Costle*, 580 F.2d 670 (D.C. Cir. 1978). Given the double contingency, and the fact that secondary lead smelting plants enjoy an avenue of relief in the event of future injury, we decline to address this matter in the present litigation.

D.

SLSA's next contention is that EPA erred when it set or failed to set flow allowances for the various steps in the secondary lead smelting process. As noted above, secondary lead smelters recycle batteries to produce lead in four steps: battery cracking, battery classification, smelting, and refining. During smelting, plants use furnace wet air pollution control. The refining process produces particulate matter, which is controlled by a kettle wet air pollution control system. Each process step produces a wastestream. Some plants recycle most, if not all, of the

wastewater produced by the battery classification process and the two air pollution control processes. EPA did not set a flow allowance for the battery classification process step. SLSA challenges this lack of flow allowance, and, in addition, challenges as too low the flow allowances for the battery cracking process step, furnace wet air pollution control, and kettle wet air pollution control. We find that EPA's decisions as to flow allowances were not arbitrary or capricious, and uphold the regulations.

EPA did not set a flow allowance for battery case classification because it had obtained data from plants which reuse 100 percent of the wastewater from this process step. SLSA contends that recycling wastewater "dirties" equipment, necessitating continuous maintenance. Congress, however, required EPA to search out the Best Achievable Technology, and to strive for zero discharge. Two secondary lead plants recycle 100 percent of their battery classification wastewater by running it through lime, settle and filtration. Since all secondary lead plants have a lime, settle and filtration system, EPA believes all secondary lead plants can achieve 100 percent recycle and zero discharge for battery classification. EPA thus did not act arbitrarily in denying a flow allowance for the battery classification process step.

SLSA also contends that the flow allowance for the battery cracking process step is too low. SLSA says that EPA wrongly excluded data from two plants, and based its data on plants with unrepresentatively low flows. According to EPA, twenty of the thirty-five plants with this wastestream currently meet the flow allowance limit set for battery cracking. EPA contends that it rejected data from two plants with excessively high flows, because it could find no technical justification for the high flows. The agency can reject data it reasonably believes to be unreliable. *American Meat Inst.*, 526 F.2d at 457. While it is not free to reject data arbitrarily, it may do so if it reasonably concludes that the plant is not operating effi-

ciently. The standard set by Congress is high; there is no room for data from plants which are not functioning optimally.

EPA also set comparatively low flow allowances for both kettle and furnace wet air pollution control systems. SLSA again argues that both low allowances are too low, and therefore not achievable by secondary lead smelters. Specifically, SLSA says that, in setting flow allowances for kettle scrubbers, EPA erroneously excluded data from two plants. EPA says that plants which use kettle scrubbers recycle the water used and then periodically discharge the water in order to flush out the system. EPA received data from three plants and used the lowest rate to set the flow allowance, after deciding that there was no technical justification for the two higher rates. We cannot say that EPA did not duly consider all the data, or that the agency acted unreasonably in setting the flow allowance on the basis of the best performance.

SLSA next objects that the furnace air pollution control flow allowance is too low. EPA received data from eight plants, but based the flow allowance on data from only three plants. Again, EPA's action was consistent with Congress' instruction to base effluent limitations on the Best Available Technology. Two plants recycle all of their furnace air pollution control wastewater. EPA based its flow allowance on a ninety percent recycle rate. We cannot say that EPA acted unreasonably in setting the flow allowance for furnace air pollution control systems.

In sum, EPA did not abuse its discretion in either setting or failing to set flow allowances for any of the steps in the secondary lead smelting process.

IV.

The last petitioner is Mallinckrodt, which produces columbium and tantalum salts. Columbium and tantalum are used in the aerospace, energy, and transportation indus-

tries. There are five companies in the United States which process columbium and tantalum. Three integrated plants process ore to make salts, and then process the salts to produce metal. Mallinckrodt processes raw material to make columbium and tantalum salts, which are then used by the fifth firm to make metal.

Mallinckrodt complains that EPA failed to provide adequate notice and opportunity to comment on the ammonia standards and on flow allowances. We find, however, that EPA did meet the notice and comment requirements. In addition, Mallinckrodt charges that EPA was arbitrary and capricious in promulgating rules on the basis of inadequate data. We find that EPA was neither arbitrary nor capricious, and accordingly deny Mallinckrodt's petition.

A.

Mallinckrodt uses a process known as "steam-stripping" to reduce the levels of ammonia in wastewater. EPA set effluent limitations for ammonia, using steam-stripping as the model technology. EPA based the ammonia concentration standard on data from a single plant in the iron and steel industry. In its comments, Mallinckrodt objected that the data was insufficient. In connection with a related rulemaking, EPA had obtained data from a zirconium-hafnium plant that also used steam stripping. EPA examined the zirconium-hafnium data to see what levels of ammonia concentration were achievable.

Mallinckrodt argues that EPA's failure to publish the data from the zirconium-hafnium plant deprived Mallinckrodt of the opportunity to comment. Had it been given the opportunity, Mallinckrodt says, it would have pointed out that Mallinckrodt's wastewater has significantly greater quantities of fluorides and sulfates than does the zirconium-hafnium wastewater. Mallinckrodt says that the fluorides and sulfates interfere with the ability of steam stripping to release ammonia, hence it will not be able to

achieve the effluent limitations based on the zirconium-hafnium data. According to EPA, however, the iron and steel data continued to be the basis for the final regulations; the zirconiun-hafnium data was used only to confirm the limits.

The requirement of notice and an opportunity to comment is designed to ensure that interested persons are apprised of the "subjects and issues" before the agency. *American Iron and Steel Inst. v. EPA*, 568 F.2d 284, 293 (3rd Cir. 1977). This requirement should not, however, be maneuvered to block enforcement of a regulation indefinitely. The case law establishes that an agency may promulgate a rule which differs from the proposed rule, without re-opening the comment period. "The requirement of submission of a proposed rule for comment does not automatically generate a new opportunity for comment merely because the rule promulgated by the agency differs from the rule it proposed, partly at least in response to submissions." *International Harvester Co. v. Ruckelshaus*, 478 F.2d 615, 632 (D.C. Cir. 1973). Were the law otherwise, rulemakings might never be terminated.

The reviewing court must in turn strike a balance between ensuring public participation and not obstructing the passage of valid regulations. "The essential inquiry is whether the commenters have had a fair opportunity to present their views on the contents of the final plan. We must be satisfied, in other words, that given a new opportunity to comment, commenters would not have their first occasion to offer new and different criticisms which the Agency might find convincing." *BASF Wyandotte*, 598 F.2d at 642 (footnote omitted).

Had it been given the opportunity to comment on the zirconium-hafnium data, Mallinckrodt would have discussed fluoride and sulfate interference. However, as Mallinckrodt itself concedes, other commenters discussed the possibility of fluoride/sulfate interference when they com-

mented on the iron and steel data. Mallinckrodt commented on the iron and steel data; it could have raised the issue of fluoride/sulfate interference at that point. We cannot conclude that by its use of the zirconiun-hafnium data EPA deprived Mallinckrodt of meaningful notice and opportunity to comment on the effluent limits for ammonia.

B.

Mallinckrodt challenges the flow allowances for the columbium-tantalum industry, on the grounds that it did not have notice or an opportunity to comment on the normalizing parameter, and that EPA did not use data from one of Mallinckrodt's plants. Neither of Mallinckrodt's contentions with respect to flow allowance merits remanding the regulations. In the proposed rules, EPA had calculated the permissible flows according to the amount of end-product. That is, a plant was entitled to discharge more wastewater if it produced more salts or metal. In the final rules, EPA made flow allowances proportional to the amount of raw material used. Mallinckrodt complains that it was never given an opportunity to comment on EPA's decision to normalize flow on the basis of raw concentrate rather than end-product. Mallinckrodt says that the final rules would permit it to disharge only 218 pounds of ammonia per year, as opposed to the 1,219 pounds per year permitted by the proposed rules.

EPA replies that Mallinckrodt's flow allowance dropped not because of the change in normalizing parameters but because EPA obtained more flow data and realized that the original flow allowance was too high. EPA changed the normalizing parameter in response to other comments. However, Mallinckrodt's flow allowance would have dropped dramatically even if EPA had not changed the normalizing parameter. Therefore, the pertinent question is whether EPA acted arbitrarily in excluding Mallinckrodt's data when it calculated the flow allowance.

To set the flow for concentrate digestion wet air pollution control, EPA obtained data from three plants, numbered 507, 509 (Mallinckrodt's plant) and 519. Plant 519 used the same air pollution control for two separate processes; EPA concluded that it could not base a flow allowance for one process on the data from plant 519. Plant 509 discharged fifteen times more wastewater than plant 507. EPA says that the two plants were similar in many respects and that although Mallinckrodt had many opportunities to do so, it never pointed out any process differences during the rulemaking. EPA decided that plant 509's flow rate was excessive, and based the standard on plant 507.

Here, EPA was setting the standard according to BPT (best practicable technology), rather than BAT. BPT is normally the average of the best performing plants. However, since EPA had data from only three plants, and one set of data was clearly unusable, it was not unreasonable for EPA to set limits according to the better remaining performer. *See National Crushed Stone*, 449 U.S. at 76 n.15.

V

The objections made to the EPA regulations by petitioners have been numerous. We have considered those we believe to be the most substantial, and we find them insufficient to establish a case of arbitrary behavior on the part of the agency. The technical intricacy of the judgments at issue reminds us again of the constraints and limitations of judicial review and of the heavy obligations imposed upon agency specialists to bring to their tasks a sense of fairness as well as a briefcase of expertise.

In this case the Environmental Protection Agency conducted its rulemaking in conformity with the Administrative Procedure Act and the Clean Water Act. To the best of this court's belief, the regulations here were properly promulgated and will assist the protection of human health,

nutriment, and recreation which the Congress envisioned as the legacy of cleaner waterways.

The petitions are accordingly

DENIED.

APPENDIX B

UNITED STATES COURT OF APPEALS FOR THE FOURTH CIRCUIT

No. 84-1288

KENNECOTT,

Petitioner,

versus

U.S. ENVIRONMENTAL PROTECTION AGENCY,

Respondent.

GTE PRODUCTS CORPORATION,

Intervenor/Petitioner.

FILED:

JANUARY 24, 1986

No. 84-1479

AMERICAN MINING CONGRESS, AMAX, INC., and ASARCO INCORPORATED,

Petitioners,

versus

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,

Respondent.

No. 84-1487

ST. JOE MINERALS CORPORATION,
Petitioner,

versus

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,
Respondent.

No. 84-1659

THE SECONDARY LEAD SMELTERS ASSOCIATION,
Petitioner,

versus

WILLIAM RUCKELSHAUS, Administrator
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,
Respondent.

GULF COAST LEAD COMPANY,
Intervenor. Petitioner

No. 84-1694

MALLINCKRODT, INC.
Petitioner,

versus

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,
Respondent.

ORDER

The petitions of Group I Petitioners: Kennecott, American Mining Congress, AMAX, Inc., ASARCO, Inc. and St. Joe Minerals Corporation; Group III Petitioners: The Secondary Lead Smelters Association, Inc. and Gulf Coast Lead Company, Inc.; and Group IV Petitioner: Mallinckrodt, Inc. for rehearing and suggestions for rehearing in banc were submitted to this Court. As no member of the Court requested a poll on the suggestions for rehearing in banc, and

As the panel considered the petitions for rehearing and is of the opinion that they should be denied,

IT IS ORDERED that the petitions for rehearing and suggestions for rehearing in banc are denied.

Entered at the direction of Judge Wilkinson with the concurrence of Judge Phillips and Judge Murnaghan.

For the Court,

/s/JOHN M. GREACEN
John M. Greacen
CLERK

APPENDIX C

UNITED STATES COURT OF APPEALS FOR THE FOURTH CIRCUIT

No. 84-1288(L)

KENNECOTT,

Petitioner,

versus

U.S. ENVIRONMENTAL PROTECTION AGENCY,

Respondent.

GTE PRODUCTS CORPORATION,

Intervenor for Petitioner.

FILED:

AUGUST 2, 1985

No. 84-1479

AMERICAN MINING CONGRESS, *et al.*,

Petitioners,

versus

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,

Respondent.

No. 84-1487

ST. JOE MINERALS CORPORATION,

Petitioner,

versus

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,

Respondent.

No. 84-1629

THE ALUMINUM ASSOCIATION, INC.,

Petitioners,

versus

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, *et al.*,

Respondents.

No. 84-1630

ALUMINUM RECYCLING ASSOCIATION,

Petitioner,

versus

U. S. ENVIRONMENTAL PROTECTION AGENCY,

Respondent.

No. 84-1659

THE SECONDARY LEAD SMELTERS ASSOCIATION,

Petitioner,

versus

WILLIAM RUCKELSHAUS, etc.,

Respondent.

Gulf Coast Lead Company,

Intervenor for Petitioner

No. 84-1694

MALLINCKRODT, INC.,

Petitioner,

versus

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,

Respondent.

ORDER

Upon consideration of Group I petitioners' unopposed motion for leave to file a supplemental appendix as an addendum to their reply brief;

IT IS ORDERED that the motion is granted.

FOR THE COURT—BY DIRECTION

/s/JOHN M. GREACEN
John M. Greacen
CLERK

APPENDIX D

[Appendix 4 in Petitioners' Reply Brief]

AFFIDAVIT OF DOUGLAS E. McALLISTER

1. My name is Douglas E. McAllister. I am the Assistant Chief Counsel, American Mining Congress (AMC), 1920 N Street, N.W., Suite 300, Washington, D.C.

Since 1979, I have had primary AMC staff responsibility relating to the Environmental Protection Agency's (EPA) Nonferrous Metals Manufacturing Effluent Limitations Guidelines (Phase I). In this capacity I served as the primary coordinator between the AMC member companies and EPA representatives. I assisted the AMC working group that developed comments on EPA's proposed Phase I regulations and submitted the comprehensive AMC data base from seven primary nonferrous metals facilities owned by AMC member companies.

2. On December 16, 1983, a representative of St. Joe Minerals Company and I telephoned the EPA Project Officer and inquired about the status of EPA's analysis of the AMC data base. (*See* R. 44622; JA 1854). He said EPA was contemplating the possibility of adding sulfide precipitation to the "best available technology" (BAT) designation in the final regulations. He did not indicate in this conversation that EPA would adopt sulfide precipitation without first allowing AMC to examine and comment on any supporting data. This was the first time EPA notified AMC of any possibility that sulfide precipitation technology would be added to the regulations. At that time we requested from the Project Officer any and all available information on sulfide precipitation; no information was supplied prior to adoption of the final regulations.

3. On January 5, 1985, I, along with members of the AMC working group, had a conference telephone call with the EPA Effluent Guidelines Branch Chief and Project

Officer. We inquired about the results of EPA's analysis of the AMC data base. During this conference call, we were told that EPA had decided to add sulfide precipitation to lime, settle and filtration as the designated BAT in the final regulations.

We inquired about the basis for the Agency's reliance on sulfide precipitation and were told that a "couple of facilities in the nonferrous metals industry" use sulfide precipitation technology. The Agency representatives also referred to the inorganic chemicals development document, the metals finishing development document, the nonferrous metals development document and data EPA obtained from the Boliden smelter in Sweden.

We were told that EPA was conducting bench-scale tests using sulfide precipitation on wastewater samples taken from the Kennecott smelter and the data from this test might be used to support EPA's designation of sulfide precipitation as BAT. We requested and were promised a copy of the report of this testing.

We were also told, for the first time, that EPA intended to adopt sulfide precipitation without providing any opportunity for comment. EPA failed to include a record of this conference call in the Administrative Record. My contemporaneous notes of this conversation are incorporated herein as Attachment A.

4. AMC did not receive a copy of the Kennecott report until May 16, 1984, over 2 months after the final regulations were issued. *See* Attachment B. To the best of my knowledge, no AMC member company received a copy of the Kennecott report prior to that time. Kennecott itself did not receive the report until after it filed a Freedom of Information Act request. *See* Attachments C and D.

/s/DOUGLAS E. MCALLISTER
Douglas E. McAllister

Subscribed and sworn to before
me this 12th day of July, 1985

/s/BECKY RAE BAGGERUD
Notary Public

My commission expires:

My commission expires August 14, 1989

Attachment A

[Handwritten Notes of Mr. McAllister]

Q: Using battery long term data for pb?

Attachment A

Basis of sulfide precip.? data? transferability?
Costing info on sul. precip.?

Kenn sampling -

CF CALL W/ Berlow & Hall
1/5/84

Robbins
Crosser
Janeck
Berlow
Hall
McAllister

1- Promul Jan' 31 - will do it.

2- Bottom line: of 7 plants
3 pass tech. screen based on design
(Sauget, Boss, Monaca)
Thrown out Port Nickel - all rainfall
ASARCO Corpus: stormwater
Herculaneum: underdesigned clarifiers
no equalization

3- For 3 plants: LS, LSF cannot meet #'s
Primary zn: Sauget can't meet b/c influent conc.
high. preleach contributes
Monaca - ammonia complexation
Boss - high influent - something else going on.

3 facilities doing a *lot worse than norm* - (CMDB)
Boss - " " - #s in other category
(from a concentration standpoint) " " - other categories in Ernie division. (incld. those not using CMDB).

: need add'l technology: sulfide precipitation.
gen'lly-[produces hazardous sludge, removal not significant, expensive
Here- thinks it will have sig. removal

L & S, sulfide & settle filter
1 2 3

To handle selection problem.
- Ft. Madison
- tungsten (EPA has some data)

Couple of facilities in NF industry - Copper refining
Does not know re
Port Nickel
DEM get *copy* - Inorganic chemicals Dev. Doc. CD, zn
Phase I
- Metal Finishing - address sulfide (Dev. Doc)
- addressed in NF Doc in terms of relative removal.
- Sweden - Bleden - Batelle

pb - #'s modified as result of F.R. notice, battery 2⁰ pb
Costing done on sulfide tech.
disposal of haz. waste sludge
precip & sed. step. (Doubled L&S greenfield #'s)
capital costs
will refine #'s later this mo.
sodium sulfide used by EPA

optimum sul. precip occurs at 7 or higher pH.
sludge disposal - cost figured generally across the board

Kennecott - arsenic problem. EPA looking to get AS down.
Bench scale tests. Done in time for promulgation.
Either-or, if then,

Data may be used gen'lly to support sul. precip. #'s.
Ravan- end of week of 1/16.

Each plant analyzed individually
Long term mean, 10 day, 30 day.
Then reacted to range.

Changes in proposal requiring reproposal.
EPA attys think these changes do not require reproposal
#'s are same as proposed.
These plants have difficulty : add'l technology.

No closures. No line closures.
No serious economic consequences.
Cost effectiveness #'s aren't finished yet.

Non-building block flows -
Not likely that language will end up in regulation itself but will be in preamble.

Aluminum Forming is happy with way its handled there.
F.R. printing policy & guidelines.

Not anywhere near 100,000,000

Attachment B

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MAY 16 1984

Mr. Douglas McAllister
American Mining Congress
1200 18th Street, N.W.
Washington, D.C. 20036

Dear Mr. McAllister:

Please find attached the results of the Kennecott treatability study that you have requested. If you have any technical questions regarding this study, please feel free to contact me.

Sincerely,
/s/JAMES R. BERLOW
James R. Berlow, P.E.
Project Officer
Metals & Machinery Branch (WH-552)

Enclosures

Attachment C

PRATHER SEEGER DOOLITTLE & FARMER
1101 Sixteenth Street, N.W.
Washington, D.C. 20036

March 19, 1984

BY HAND DELIVERY

Mrs. Jeralene Green
Freedom of Information Officer (A-101)
Room 227D - West Tower
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

Re: Freedom of Information Act Request

Dear Mrs. Green:

On behalf of Kennecott, I request, pursuant to the Freedom of Information Act, 5 U.S.C. § 552, and Environmental Protection Agency regulations, Part 2 - Public Information, Subpart A - Requests for Information, 40 C.F.R. § 2.100, *et. seq.*, that the following materials be made available for inspection and copying:

Any and all information, records, raw data, test results, analysis and evaluation concerning Radian Corporation's sampling and bench scale testing of sulfide precipitation on wastewater samples collected at Kennecott's Utah Copper Division in December, 1982.

Please contact me by telephone (296-0500) as soon the Initial Determination, required by April 2, 1984, has been made.

Thank you for your help.

Yours very truly,
/s/RICHARD T. WITT
Richard T. Witt

Attorney for Kennecott

RTW:jsw

Attachment D

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

APRIL 17, 1984

Richard T. Witt, Esq.
Prather, Seeger, Doolittle, & Farmer
1101 Sixteenth Street, N.W.
Washington, D.C. 20036

RE: Freedom of Information Act Request of Kennecott Copper Co. RIN-840-84

Dear Mr. Witt:

This letter responds to your request of March 19, 1984, on behalf of Kennecott Copper Co., for "(a)ny and all information, records, raw data, test results, analysis and evaluation concerning Radian Corporation's sampling and bench scale testing of sulfide precipitation on wastewater samples collected at Kennecott's Utah Copper Division in December, 1983."

Although this information is not in the Agency's possession, and so at this time is not an "Agency record" for purposes of the Freedom of Information Act, the Agency has decided to grant your request. This information is part of the administrative record to the nonferrous metals phase I rules. We are now in the process of compiling, collecting, indexing and printing the record. The particular information you request is being collated as part of that process.

This process will not be completed by April 16. The Agency, in fact, is not required to file the administrative record until May 14. The certified index to the record also need not be filed until sometime in May. We are trying to collate the bench-scale data on sulfide precipitation more rapidly so you can receive it before we file the entire

record or the certified index. However, the personnel involved in preparing the record are all also involved in developing other regulations that are subject to court-mandated deadlines. Accordingly, we cannot promise precisely when we will be able to supply this information to you, beyond stating that we will try and furnish it before the record is filed.

You may appeal this initial determination by sending a written appeal to the EPA Freedom of Information Officer, A-101, 401 M Street, S.W., Washington, D.C 20460. Any appeal must be filed within 30 days of receipt of this letter.

Sincerely yours,

/s/STEVEN SCHATZOW

Steven Schatzow, Director

Office of Water Regulations &

Standards (WH-551)

APPENDIX E

UNITED STATES COURT OF APPEALS FOR THE FOURTH CIRCUIT

No. 84-1288(L)

KENNECOTT,

Petitioner,

versus

U.S. ENVIRONMENTAL PROTECTION AGENCY,

Respondent.

GTE PRODUCTS CORPORATION

Intervenor/P.

FILED:

APRIL 16 1985

No. 84-1479

AMERICAN MINING CONGRESS, *et al.*,

Petitioners,

versus

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,

Respondent.

No. 84-1487

ST. JOE MINERALS CORPORATION,
Petitioner,

versus

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,
Respondent.

No. 84-1629

THE ALUMINUM ASSOCIATION, INC.,
Petitioners,

versus

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, *et al.*,
Respondents.

No. 84-1630

ALUMINUM RECYCLING ASSOCIATION,
Petitioner,

versus

U.S. ENVIRONMENTAL PROTECTION AGENCY,
Respondent.

No. 84-1659

THE SECONDARY LEAD SMELTERS ASSOCIATION,
Petitioner,

versus

WILLIAM RUCKELSHAUS, etc.,
Respondent.

GULF COAST LEAD COMPANY,
Intervenor/P.

No. 84-1694

MALLINCKRODT, INC.,
Petitioner,

versus

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,
Respondent.

ORDER

Upon consideration of Group I petitioners' motion for reconsideration of the court order entered March 1, 1985, which struck portions of petitioners' briefs and denied petitioners' motions to supplement the record;

IT IS ORDERED that the motion is denied.

Entered at the direction of Judge Phillips with the concurrence of Judge Hall and Judge Murnaghan.

FOR THE COURT,

/s/JOHN M. GREACEN
John M. Greacen
CLERK

APPENDIX F

UNITED STATES COURT OF APPEALS FOR THE FOURTH CIRCUIT

No. 84-1288(L)

KENNECOTT,

Petitioner,

versus

U.S. ENVIRONMENTAL PROTECTION AGENCY,

Respondent.

GTE PRODUCTS CORPORATION,

Intervenor/P.

FILED:

MARCH 1, 1985

No. 84-1479

AMERICAN MINING CONGRESS, *et al.*,

Petitioners,

vversus

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,

Respondent.

No. 84-1487

ST. JOE MINERALS CORPORATION,
Petitioner,

versus

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,
Respondent.

No. 84-1629

THE ALUMINUM ASSOCIATION, INC.,
Petitioners,

versus

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, *et al.*,
Respondents.

No. 84-1630

ALUMINUM RECYCLING ASSOCIATION,
Petitioner,

versus

U.S. ENVIRONMENTAL PROTECTION AGENCY,
Respondent.

No. 84-1659

THE SECONDARY LEAD SMELTERS ASSOCIATION,
Petitioner,

versus

WILLIAM RUCKELSHAUS,etc.,
Respondent.

GULF COAST LEAD COMPANY,
Intervenor/P.

No. 84-1694

MALLINCKRODT, INC.,
Petitioner,

versus

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,
Respondent.

No. 84-1782

NRC, INC.,
Petitioner,

versus

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,
Respondent.

ORDER

Upon consideration of the motions of the Group I and the Group III petitioners to supplement the record and their motions for extension of time to reply to respondent's motion in opposition to the motions to supplement and its motion to strike;

IT IS ORDERED that the motions are denied.

Entered at the direction of Judge Phillips with the concurrence of Judge Hall and Judge Murnaghan.

FOR THE COURT,

/s/JOHN M. GREACEN
John M. Greacen
CLERK

APPENDIX G

UNITED STATES COURT OF APPEALS FOR THE FOURTH CIRCUIT

No. 84-1288(L)

KENNECOTT,

Petitioner,

versus

U.S. ENVIRONMENTAL PROTECTION AGENCY,

Respondent.

GTE PRODUCTS CORPORATION,

Intervenor/Petitioner

FILED:

AUGUST 23, 1984

No. 84-1479

AMERICAN MINING CONGRESS, AMAX, INC., and ASARCO INCORPORATED,

Petitioners,

versus

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,

Respondent.

No. 84-1487

ST. JOE MINERALS CORPORATION,
Petitioner,

versus

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Respondent.

No. 84-1629

THE ALUMINUM ASSOCIATION, INC., KAISER ALUMINUM & CHEMICAL CORPORATION, and REYNOLDS METALS COMPANY,
Petitioners,

versus

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY and WILLIAM D. RUCKELSHAUS, Administrator,
Respondents.

No. 84-1630

ALUMINUM RECYCLING ASSOCIATION,
Petitioner,

versus

U.S. ENVIRONMENTAL PROTECTION AGENCY,
Respondent.

No. 84-1659

THE SECONDARY LEAD SMELTERS ASSOCIATION,
Petitioner,

versus

WILLIAM RUCKELSHAUS, Administrator
UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY,
Respondent.

No. 84-1694

MALLINCKRODT, INC.,
Petitioner,

versus

UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY,
Respondent.

No. 84-1782

NRC, INC.,
Petitioner,

versus

UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY,
Respondent.

ORDER

Pursuant to Local Rule 28,

IT IS ORDERED that the above-styled cases are consolidated for briefing and oral argument. A briefing schedule will be established upon receipt of the certified list. The petitioners will be grouped into four interest groups at the time the briefing schedule is established and each interest group will be allowed to file a separate brief and reply brief. All parties will coordinate in the filing of a single joint appendix and all parties to a side shall share the time allowed for oral argument provided by the Federal Rules of Appellate Procedure. All future materials filed in these consolidated cases shall be marked with the lead docket number—No. 84-1288(L).

For the Court—By Direction.

/s/JOHN M. GREACEN
John M. Greacen
CLERK

APPENDIX H

UNITED STATES CODE
CHAPTER 5—ADMINISTRATIVE PROCEDURE

* * * * *

§ 553 Rulemaking

* * * * *

(b) General notice of proposed rule making shall be published in the Federal Register, unless persons subject thereto are named and either personally served or otherwise have actual notice thereof in accordance with law. The notice shall include—

(1) a statement of the time, place, and nature of public rule making proceedings;

(2) reference to the legal authority under which the rule is proposed; and

(3) either the terms or substance of the proposed rule or a description of the subjects and issues involved.

Except when notice or hearing is required by statute, this subsection does not apply—

(A) to interpretative rules, general statements of policy, or rules of agency organization, procedure, or practice; or

(B) when the agency for good cause finds (and incorporates the finding and a brief statement of reasons therefor in the rules issued) that notice and public procedure thereon are impracticable, unnecessary, or contrary to the public interest.

(c) After notice required by this section, the agency shall give interested persons an opportunity to participate in the rule making through submission of written data, views, or arguments with or without opportunity for oral presentation. After consideration of the relevant matter presented, the agency shall incorporate in the rules adopted a concise general statement of their basis and purpose. When rules are required by statute to be made on the record after opportunity for an agency hearing, sections 556 and 557 of this title apply instead of this subsection.

* * * * *

APPENDIX I

FEDERAL WATER POLLUTION CONTROL ACT, AS AMENDED BY THE CLEAN WATER ACT OF 1977
(Commonly Referred to as Clean Water Act)

* * * * *

Sec. 304 INFORMATION AND GUIDELINES

* * * * *

(b) For the purpose of adopting or revising effluent limitations under this Act the Administrator shall, after consultation with appropriate Federal and State agencies and other interested persons, publish within one year of enactment of this title, regulations, providing guidelines for effluent limitations, and, at least annually thereafter, revise, if appropriate, such regulations. Such regulations shall

* * * * *

(2) (A) identify, in terms of amounts of constituents and chemical, physical, and biological characteristics of pollutants, the degree of effluent reduction attainable through the application of the best control measures and practices achievable including treatment techniques, process and procedure innovations, operating methods, and other alternatives for classes and categories of point sources (other than publicly owned treatment works: and

* * * * *

APPENDIX J

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 421

[OW-FRL-2289-1]

Nonferrous Metals Manufacturing Point Source Category; Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards

AGENCY: Environmental Protection Agency [EPA]

ACTION: Proposed regulation.

* * * * *

VII. Available Wastewater Control and Treatment Technology

A. Control Technologies Considered

The control and treatment technologies available for this category include both in-process and end-of-pipe treatments. These technologies were considered appropriate for the treatment of nonferrous metals manufacturing wastewater and formed the basis of the regulatory options. These control and treatment technologies are discussed in greater detail in Section VII of the General Development Document. The applicability of each of the technologies to specific sources of wastewater is discussed in the subcategory supplements.

In-process treatment includes a variety of water flow reduction steps and major process changes. The following in-process treatments are considered for this proposal:

Recycle. Recycling of processing water is the practice of treating and returning water to be used again for the same purpose. Total recycle can be achieved (in theory) through the use of reverse osmosis. In establishing PSES for secondary copper, EPA considered complete recycle and reuse of process wastewater after treatment with lime precipitation, and sedimentation to remove suspended solids and metals. EPA also considered partial recycle of process water by using cooling towers and holding tanks. In doing so, we considered that it may be necessary to discharge a bleed stream to purge dissolved and suspended solids that tend to accumulate in the system.

End-of-pipe treatment includes modules used to reduce pollutant concentrations prior to discharge. The following end-of-pipe treatments are considered for this proposal:

Chemical Precipitation. Chemical precipitation generally involves adjusting the pH and adding a flocculationg agent to precipitate out of solution metal ions (e.g., copper) and certain anions (e.g., fluoride). The chemical commonly associated with this treatment is lime.

Sedimentation. Sedimentation is a process which removes solid particles from a liquid matrix by gravitational force. This is done by reducing the velocity of the feed stream in a large volume tank or lagoon so that gravitational settling can occur. This treatment when combined with chemical precipitation is frequently referred to as lime and settle treatment.

Ammonia Steam Stripping. Steam may be used to remove ammonia from process wastewater. Generally, the steam is introduced into a separation column countercurrent to the process wastewater. The ammonia is absorbed into the steam. In some instances it may be necessary to

add an additional stripping stage in which the pH of the wastewater is elevated in order to remove certain types of ammonia compounds.

Cyanide Oxidation or Precipitation. With the addition of oxidizing agents or complexing agents cyanide can either be oxidized or complexed. Cyanide can also be precipitated out of solution using ferrous or zinc sulfate. Cyanide precipitation is the more effective technology for removal of cyanide complexed with metals such as iron.

Oil Skimming. Oil and other materials with a specific gravity less than water often float unassisted to the surface of the wastewater. Skimming removes these floating wastes usually in a tank designed to allow floating debris to rise while the water flows to an outlet located below the floating layer. A variety of devices are used to remove the floating layer from the surface.

Carbon Adsorption. The use of activated carbon to remove dissolved organics is one of the most efficient organic removal processes available. The carbon removes contaminants from water by the process of adsorption or the attraction and accumulation of one substance on the surface of another. Activated carbon preferentially adsorbs organic compounds and because of this selectivity is particularly effective in removing organic compounds from aqueous solution.

Activated Alumina. Activated alumina may be used as an end-of-pipe treatment process to further reduce concentrations of arsenic and fluoride below those in the effluent from a chemical precipitation and sedimentation system.

Multimedia Filtration. Gravity mixed-media filtration may be used as an end-of-pipe polishing step to reduce concentrations of toxic metals. Rapid sand or pressure filters perform as well and may be used interchangably with gravity mixed media filters.

Reverse osmosis was considered for the purpose of achieving zero discharge of process wastewater; however, the Agency ultimately rejected this technology because it was determined that its performance for this specific purpose was not adequately demonstrated in this category nor was it clearly transferable from another category. Activated alumina was also considered; however, this technology was rejected because it too was not demonstrated in this category nor was it clearly transferable to nonferrous wastewater.

B. Status of In-Place Technology

Current wastewater treatment practices in the nonferrous metals manufacturing category range from no treatment to treatment with chemical precipitation, sedimentation and filtration. Of the 134 discharging plants, 61 plants have treatment to remove metals and suspended solids, four have technologies for oil removal, six practice ammonia stripping and 22 practice end-of-pipe filtration. The remainder of the dischargers did not report any treatment for their nonferrous metals manufacturing wastewaters.

Recycle using treatment of lime precipitation and sedimentation is practiced at 20 plants. Three plants use filtration while two other plants use ammonia stripping prior to recycling process water.

C. Control and Treatment Options

EPA considered the following treatment and control options as the basis for BPT, BAT, BCT, NSPS, PSES, and PSNS for facilities within the nonferrous metals manufacturing category:

Option A—End-of-pipe treatment consisting of lime precipitation and sedimentation, and preliminary treatment, where necessary, consisting of oil skimming, cyanide precipitation, and ammonia steam stripping. This combination

of technology reduces toxic metals and conventional and nonconventional pollutant.

Option B—Option B uses the same end-of-pipe treatment as Option A (lime precipitation and sedimentation) preceded by flow reduction of process wastewater through the use of cooling towers for contact cooling water and holding tanks for all other process wastewater subject to recycle.

Option C—Option C uses the same in-process flow reduction as Option B and adds polishing filtration to the end-of-pipe treatment included in Options A and B (preliminary treatment, lime precipitation, sedimentation and filtration). This result in a further reduction of toxic metals and TSS.

Option D—Option D uses the in-plant flow reductions and end-of-pipe treatment in Option C and adds treatment of isolated waste streams with activated carbon adsorption for removal of toxic organics and activated alumina for reduction of fluorides and arsenic concentrations.

Option E—Option E consists of Option C flow reduction and end-of-pipe technology plus activated carbon adsorption applied to the total plant discharge as a polishing step to reduce toxic organic concentrations.

Option F—Option F consists of Option C flow reduction and end-of-pipe technology plus reverse osmosis treatment to attain complete recycle of all process wastewater.

* * * * *

XXIV. Solicitation of Comments

EPA invites public participation in this rulemaking. We ask that any perceived deficiencies in the record be addressed specifically. We also ask that any suggested revisions or corrections be supported by data.

In addition to issues already addressed in the preamble, EPA is particularly interested in receiving additional comments and information on the following issues:

* * * * *

2. The Agency is continuing to seek additional data to support these proposed limitations. The treatment effectiveness data for lime precipitation and sedimentation and lime precipitation, sedimentation and filtration technology. This regulation are based on the results of Agency sampling of the raw wastewaters and treated effluents from a broad range of plants generating similar wastewaters and (for filtration) on long-term self-monitoring. The Agency invites comments on the treatment effectiveness results, and the statistical analysis and underlying assumptions discussed in Section VII of the Development Document as they pertain to the nonferrous metals manufacturing plants. The Agency specifically requests long-term sampling data (especially paired raw wastewater-treated effluent data) from nonferrous metals manufacturing plants having well-operated treatment systems using the treatment technologies relied upon for this regulation, and also other equally effective treatment technologies.

* * * * *

APPENDIX K

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 421

[OW-FRL 2289-1]

Nonferrous Metals Manufacturing Point Source Category; Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards

AGENCY: Environmental Protection Agency [EPA]
ACTION: Final rule.

* * * * *

C. Technology Basis for Final Regulations

* * * * *

Primary Copper Electrolytic Refining

* * * * *

Extensive effluent data submitted to the Agency by an integrated copper refiner and smelter have indicated that the proposed arsenic mass limitations based on lime and settle treatment may not be achievable for this plant. The Agency believes that the larger arsenic values in the plant's ore contribute significant quantities of arsenic to the treatment system. Arsenic concentrations in excess of 100 mg/l are common at this plant, making the combined metals data base inappropriate. The Agency believes that the mass limitations as proposed for the primary electrolytic copper

limitations as proposed for the primary electrolytic copper refining subcategory and metallurgical acid plant subcategory are achievable for this plant by adding sulfide precipitation to the model treatment technology. The Agency thus has determined that the combination of sulfide precipitation, lime and settle, and multimedia filtration will achieve the mass limitations promulgated and has included this technology in its compliance cost estimates for this one plant.

* * * * *

Primary Lead

The Agency has amended the proposed BAT technology basis for primary lead plants operating acid plants to include sulfide precipitation. The technology basis thus consists of in-process flow reduction through recycle and end-of-pipe lime and settle, sulfide precipitation (followed by sedimentation), and multimedia filtration technology. Extensive treatment performance data submitted to the Agency from a plant in this subcategory suggest that the proposed BAT mass limitations may not be achievable. The principal reason for not being able to attain the filtration performance data is the inability to achieve the combined metals data lime and settle values. However, the Agency believes the addition of sulfide precipitation, in conjunction with multimedia filtration, will achieve the treatment performance values as proposed wastewaters. (Sulfide precipitation technology is discussed fully in Section VII of the General Development Document.) Sulfide precipitation is currently demonstrated at a primary molybdenum plant with a metallurgical acid plant, and at a cadmium plant in the primary zinc subcategory. For those plants only generating wastewater to meet industrial hygiene requirements, the technology basis does not include sulfide precipitation since these waste streams are not so contaminated as to require the additional treatment.

* * * * *

Primary Zinc

The Agency has amended the proposed BAT technology basis for the primary zinc subcategory to include sulfide precipitation. The complete technology basis thus consists of in-process flow reduction through recycle and end-of-pipe lime and settle, sulfide precipitation (followed by sedimentation), and multimedia filtration technology. Extensive treatment performance data submitted to the Agency by a plant in the subcategory demonstrate that the proposed BAT mass limitations may not be achievable. The principal reason for not being able to attain the filtration performance data is the inability to achieve the combined metals data lime and settle values. However, the Agency believes for the reasons given in Section V.B above that the addition of sulfide precipitation in conjunction with multimedia filtration, will achieve the treatment performance values as proposed. Sulfide precipitation is currently demonstrated at a primary molybdenum plant with a metallurgical acid plant and at a cadmium plant in the primary zinc subcategory.

* * * * *

Metallurgical Acid Plants

The Agency has amended the proposed technology basis for one copper acid plant and for all acid plants associated with zinc and lead smelting to include sulfide precipitation. The complete technology basis for this subcategory thus consists of in-process flow reduction through recycle and end-of-pipe lime and settle, sulfide precipitation (followed by sedimentation), and multimedia filtration technology. Extensive treatment performance data submitted to the Agency by copper, lead, and zinc acid plants demonstrate that the proposed BAT mass limitations are not achievable largely due to inability to achieve the combined metals data lime and settle values. However, for the reasons al-

ready explained, the Agency believes that addition of sulfide precipitation, in conjunction with multimedia filtration, will achieve the treatment performance values as proposed. Sulfide precipitation is currently demonstrated at a primary molybdenum plant with a metallurgical acid plant, and at a cadmium plant in the primary zinc subcategory.